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## Air in the bones: multifocal anaerobic osteomyelitis associated with oat cell carcinoma

Under 2% of cases of osteomyelitis are due to anaerobes.<sup>1</sup> We report a case of multifocal anaerobic osteomyelitis complicating widespread bone metastases from an oat cell carcinoma of the lung.

### Case report

A 60 year old white man was admitted with low back pain, 10 kg weight loss, and bilateral leg oedema. He was a heavy smoker and drinker. He was afebrile with signs of chronic alcoholism and bilateral leg oedema. Oral hygiene was poor. His liver was firm and enlarged. His lumbar vertebrae and pelvic bones were painful on percussion. White cell count was  $22.3 \times 10^9/l$  (68% segmented). A chest x ray film showed a 2 cm nodule.

Computed tomography showed bilateral abscesses along the psoas and the iliac muscles and gas in the pelvic bones, T5, T6, L1, L4, L5, and the spinal canal (figure). Areas of osteolysis as well as gas were detected on x ray films



Computed tomogram of L1, showing gas bubbles within vertebral body, spinal canal, and psoas muscles (vertical arrows); psoas abscesses are seen along lateral aspect of vertebral body (horizontal arrow).

of the thoracic and lumbar spine and the pelvic bones. Metastases were seen in the liver. Bone marrow aspirate from the iliac crest was foul smelling, and Gram staining showed abundant Gram positive cocci. The bone marrow and eight blood cultures were positive for *Peptococcus indolicus*. Intravenous penicillin was started. He died on the 34th hospital day.

At necropsy a small cell carcinoma of the lung was found with metastases in the bones, liver, and lymph nodes. The sites of osteomyelitis corresponded with x ray findings; histological examination of bone showed large areas of necrosis surrounded by inflammatory cells within foci of metastatic small cells. Bilateral psoas abscesses were present.

### Comment

Anaerobic osteomyelitis results from invasion of the bones by organisms responsible for infection in an adjacent area.<sup>2</sup> It is a rare complication of anaerobic bacteraemia: of 1280 patients reported on in review articles on anaerobic bacteraemia, only seven developed osteomyelitis.<sup>3</sup> These clinical data are corroborated by experimental studies, which have shown it to be extremely difficult to establish infection with normally saprophytic organisms in uninjured bone.<sup>4</sup>

Given the low incidence of bone infection in anaerobic bacteraemia, predisposing factors may play a major part when it occurs. Of the underlying systemic diseases, haemoglobinopathies and malnutrition (which affect tissue oxidation potential) have been associated with haematogenous osteomyelitis.<sup>2,4</sup> Any condition (anaemia, ischaemia, diabetes, or malignancy) that favours disruption of normal capillary flow, however, will result in a decrease in perfused tissue oxidation potential and predispose to replication of anaerobes.<sup>4</sup> Although bone metastasis seems an ideal environment for anaerobic growth, its association with anaerobic osteomyelitis has not been reported previously. We have found only two reports of patients with anaerobic multifocal osteomyelitis<sup>5</sup>; interestingly, one of these was a child with acute lymphocytic leukaemia and bilateral femoral osteomyelitis due to bacteroides.

The diagnosis was suspected in our patient because of the presence of gas within bones on standard x ray films and a computed tomogram. Gas was even seen in the spinal canal and within bilateral paraspinal muscle abscesses. Detection of gas associated with osteomyelitis has recently been reported<sup>6</sup>; this phenomenon is probably not uncommon, as it is well known that anaerobes can produce gas.

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## Peritonitis due to *Streptococcus viridans* in patients receiving continuous ambulatory peritoneal dialysis

Was suggested that peritonitis in patients receiving continuous ambulatory peritoneal dialysis may result from haematogenous spread of bacteria from lesions in the mouth.<sup>1</sup> We report on four patients receiving continuous ambulatory peritoneal dialysis who developed peritonitis due to *Streptococcus viridans* after having oral lesions or undergoing dental surgery.